

M/035/009

January 14, 1994

To: Wayne Hedberg, Permit Supervisor

From: Holland Shepherd, Senior Reclamation Specialist, Div. of Oil Gas and Mining *HWS*

Subject: Review of Barney's Canyon Mine Waste Management Plan, M/035/009, Salt Lake County, Utah

I have reviewed the "Barneys Canyon Mine Waste Rock Management Plan, which was forwarded to this office Nov. 24, 1993. The Division of Water Quality has asked DOGM for assistance in reviewing this document, relative to our, yet unofficial, cooperative agreement concerning the permitting of mine wastes. You may want to forward these comments directly to DWQ or pass around the document to Tony and Travis for their comments. I suggest the later. I was not able to spend as much time on this as I would have liked, so this is a very cursory review of the submittal.

The operator has contracted with the consulting firm of Steffen, Robertson and Kirsten (SRK), to evaluate the potential for Acid Rock Drainage (ARD). SRK has done some extensive testing of materials from the: Melco Pit, Barneys Pit, North BCS and South BCS Pits. Testing involved static (acid base accounting) and kinetic (humidity cell) tests. SRK evaluated acid generation potential and sulfate generation potential.

It appears that SRK has found very little potential acidity in the waste materials, except for that associated with sulfide ores from the Melco Pit. This material will be dealt with separately and will not be placed on the waste dumps. Sulfide ore will be identified and sent through a proposed sulfide ore process facility.

Regarding the generation of sulfates, SRK has advised the operator to take a series of steps to prevent sulfate generation. These steps are in item #4, Management Practices to Prevent Acid Generation and Control Sulfate Mobilization (found at the back of the proposal). *I* We concur with the SRK methodology in mitigating/preventing sulfate generation. I believe that if the operator follows this methodology sulfate generation will be negligible.

During a meeting Dec. 9, 1993, with Dave Hodson and Mike Pagel (Kennecott Staff), we discussed the disposition of the new dumps that will be created as part of the Barneys Phase D expansion. The operator indicated that they will be following SRK's advise regarding hydrologic drainage associated with the dumps, plant cover, and mixing of overburden/waste materials.

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Evidently DWQ feels that the potential acid generation question has been addressed properly, however the potential for sulfate generation has not. The theory being that sulfate generation can still occur without the development of an acid environment. My background in geochemistry is insufficient to make a recommendation either way. I suggest a call to Dr. William Schaffer. My gut instinct tells me that if water is limited from leaching through the waste material, sulfate production will be limited, and that without a very acid environment sulfate production will become negligible.

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